

IN THE CLAIMS

This is a complete and current listing of the claims, marked with status identifiers in parentheses. The following listing of claims will replace all prior versions and listings of claims in the application.

1. (Previously Presented) A method of manufacturing a micro reactor device that includes a tubular reactor as a flow path and allows reaction species to react in the reactor, the method comprising the step of:

forming a particle layer including particles on an inner wall of the reactor.

2. (Previously Presented) The method as set forth in claim 1, wherein:

the particle layer is formed by causing a dispersion liquid of particles to flow through the reactor and drying the reactor.

3. (Previously Presented) The method as set forth in claim 1, wherein:

in the particle layer, the particles are aligned regularly.

4. (Previously Presented) The method as set forth in claim 1, wherein:

a solvent of the dispersion liquid is a mixed solvent including at least two kinds of solvents.

5. (Previously Presented) The method as set forth in claim 1, wherein:

the flow path has a cross section of a round or elliptical shape.

6. (Previously Presented) The method as set forth in claim 1, wherein:

the particles are a catalyst.

7. (Previously Presented) The method as set forth in claim 1, wherein:

a catalyst is supported by the particle layer.

8. (Previously Presented) The method as set forth in claim 1, wherein:

the particle layer includes composite particles formed by supporting a functional material by the particles.

9. (Previously Presented) The method as set forth in claim 8, wherein:

in the composite particles, the functional material covers the particles.

10. (Previously Presented) The method as set forth in claim 8, wherein:

the composite particles are formed by a heterocoagulation method.

11. (Previously Presented) The method as set forth in claim 8, wherein,

the composite particles are formed by controlling a surface charge of the particles by a surface-active agent.

12. (Previously Presented) The method as set forth in claim 1, wherein:

a hydrophilicity process and a hydrophobicity process are performed on desired regions of the inner wall of the reactor, and a water dispersion liquid of particles is caused to flow through the reactor.

13. (Previously Presented) The method as set forth in claim 12, wherein:

the particles are a conductive material, and electrodes are formed by sintering the particles.

14. (Previously Presented) The method as set forth in claim 1, wherein:

using the particle layer as a mold, a layer is formed by filling spaces between the particles of the particle layer with sol or nanoparticles and solidifying the sol or nanoparticles, and the particles of the particle layer are removed.

15. (Previously Presented) The method as set forth in claim 14, wherein:

the particles are removed by thermal decomposition.

16. (Previously Presented) The method as set forth in claim 14, wherein:

a catalyst is supported by the layer formed by filling and solidifying the sol or nanoparticles.

17. (Previously Presented) A micro reactor device, comprising a tubular reactor as a flow path, for allowing

reaction species to react in the reactor, the micro reactor device further comprising:

a particle layer including particles, provided on an inner wall of the reactor.

18. (Previously Presented) The micro reactor device as set forth in claim 17, wherein:

in the particle layer, the particles are aligned regularly.

19. (Previously Presented) The micro reactor device as set forth in claim 17, wherein:

the flow path has a diameter between $1\mu\text{m}$ and 1mm .

20. (Previously Presented) The micro reactor device as set forth in claim 17, wherein:

the particles of the particle layer have a diameter between 1nm and $10\mu\text{m}$.

21. (Previously Presented) The micro reactor device as set forth in claim 17, wherein:

the particle layer has a thickness of not more than $20\mu\text{m}$.

22. (Previously Presented) The micro reactor device as set forth in claim 17, wherein:

the particles are a catalyst.

23. (Previously Presented) The micro reactor device as set forth in claim 17, wherein:

the particles are composite particles supporting a functional material.

24. (Previously Presented) The micro reactor device as set forth in claim 23, wherein:

the composite particles are covered particles that are the particles covered with the functional material.

25. (Previously Presented) The micro reactor device as set forth in claim 17, wherein:

the particle layer is patterned.

26. (Previously Presented) A micro reactor device, comprising a tubular reactor as a flow path, for allowing reaction species to react in the reactor, the micro reactor device further comprising:

electrodes made of particles, provided on an inner wall of the reactor.

27. (Previously Presented) The micro reactor device as set forth in claim 26, wherein:
the electrodes are patterned.

28. (Previously Presented) A micro reactor device, comprising a tubular reactor as a flow path, for allowing reaction species to react in the reactor, the micro reactor device further comprising:

a layer having particle-shaped pores, provided on an inner wall of the reactor.

29. (Previously Presented) The micro reactor device as set forth in claim 28, wherein:

the particle-shaped pores are aligned regularly.